

Application No.: 10/065,103

Docket No.: JCLA9142

REMARKS**I. Present Status of the Application**

The Office Action rejected claims 1 and 14-16 under 35 U.S.C. § 102(e) as being anticipated by Dalal et al. (US 6,344,234).

Upon entry of the amendments in this response, the claims 1 and 14-16 are amended and claims 21-25 are newly added. Hence, claims 1, 14-16 and 21-25 are now pending in the present application, with claim 1 being independent claim. Please be noticed that in the Applicants' response to restriction requirement, dated July 28, 2003, the claims 12, 14-16 as well as the generic claim 1 have been elected for the examination on merits. Here, claim 1 is amended to further define the scope of the invention recited originally in the generic claim 1, support of which can be found, for example, in Fig. 4A. Claims 14-16 are amended for matter of form of the dependent claims. Claims 21-25 are newly added as dependent on claim 1 for further defining the invention, support of which can be found, for example, in paragraph [0027] of the specification, and Fig. 4A.

Applicants believe that the foregoing amendments do not introduce new matter. Thus, reconsideration of those claims is respectfully requested.

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II. Response to Rejections

A. Rejections under 35 U.S.C. § 102(e)

The Office Action, at pages 2-5, rejected claims 1 and 14-16 under 35 U.S.C. § 102(e) as being anticipated by Dalal et al. Applicants respectfully traverse the rejection as it applies to the amended claims for at least the reasons set forth below.

To anticipate a claim, the prior art reference must teach each and every element of the claim. M.P.E.P. § 2131.

The independent claim 1, as amended, provides an under-bump metallurgical structure comprising a metallic layer and a buffer metallic structure between the metallic layer and the solder bump, “wherein the buffer metallic structure is properly covered by the solder bump” for reducing the growth of inter-metallic compound between the metallic layer and the solder bump.

Dalal et al., however, are directed to a solder ball with “a cap of low melting point metal” (column 6, lines 34-39; Fig. 6), in other words, “a layer of low melting point metal . . . is deposited on the top of the solder balls” (abstract) (emphasis added). Dalal et al. teach that their invention “is designed to lower the melting point only at the tip of the solder interconnection height” (column 4, lines 16-10) (emphasis added). Dalal et al. further disclose that “[a]s can be clearly seen in FIG.6, that the solder ball 18, has a coating of tin 23, over only a portion of its upper surface” (column 7, lines 15-17) (emphasis added), and that “it is preferred that the thickness of the low melting point metal cap . . . provides a eutectic volume of between about 5 percent to about 30

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percent of the volume of the solder ball 18, and preferably between about 10 percent to about 20 percent of the volume of the solder ball 18" (column 7, lines 35-43). Apparently, the buffer metallic structure is not "properly covered" by the solder bump "for reducing the growth of inter-metallic compound between the metallic layer and the solder bump."

Accordingly, a person of ordinary skill in the field of the invention would consider that Dalal et al's solder ball with a low melting point metal cap is at least structurally different from the claimed solder ball with a buffer metallic structure thereunder.

Therefore, Dalal et al. do not anticipate claim 1, as amended, since Dalal et al. do not disclose each and every element of the claims. Consequently, Dalal et al. do not anticipate claims 14-16 dependent on claim 1, as a matter of law.

For at least the foregoing reasons, Applicants respectfully submit that the grounds of rejection have been addressed and the rejection has been overcome. Reconsideration and withdrawal of the rejection are respectfully requested.

B. New Claims

Claims 21-25 have been newly added to further define the scope of the invention, support of which can be found, for example, in paragraph [0027] of the specification, and Fig. 4A. The above new claims are submitted to be readable upon the elected species and patentable over the prior art of record for the following reasons.

The independent claim 1 is allowable over the prior art of record for at least the reasons as presented in the foregoing sections. Thus, new claims 21-25 are allowable as a matter of law,

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for at least the reason that these new dependent claims contain all features of their respective independent claim 1.

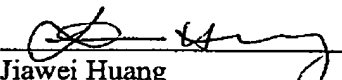
CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1, 14-16 and 21-25 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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